

***What Is Claimed Is:***

1           1.       A system for providing voice communication over a packet-  
2 switched network, comprising:

3               a gateway server that handles calls received from a public switched  
4 telephone network and a packet-switched network;

5               a routing server; and

6               a database server, wherein messages can be sent between each of the  
7 gateway server, routing server, and database server over the packet-switched  
8 network.

1           2.       The system of claim 1, further comprising:

2               a provisioning system coupled to said database server.

1           3.       The system of claim 1, further comprising:

2               a management system; wherein messages can be sent between each of the  
3 gateway server, routing server, database server, and management system over the  
4 packet-switched network.

1           4.       The system of claim 3, further comprising:

2               a network manager that automatically queries a client database to  
3 determine an update, and sends a message representative of the update to at least  
4 one of the gateway server, routing server, database server, and management  
5 system over the packet-switched network.

1           5.       The system of claim 1, further comprising:

2               a licensing server.



13. A system of claim 12, wherein said parsing subsystem comprises:  
maintaining means for maintaining a parsing table;  
receiving means for receiving call information;  
determining means for determining a country code;  
retrieving means for retrieving pattern data from said parsing table;  
determining means for determining an area code;  
determining means for determining a local number;  
determining means for determining an extension; and  
outputting means for outputting a call address.

14. A system of claim 11, further comprising:  
a dynamic cache subsystem coupled to said routing manager.

15. A system of claim 12, wherein said parsing subsystem matches routes by wildcarding.

16. A system of claim 11, further comprising:  
a conversion module.

17. A system of claim 11, further comprising:  
a hardware device manager module that coordinates telephony and network components.

18. A system of claim 11, wherein said routing manager comprises:

- maintaining means for maintaining a list of routes;
- managing means for managing connections to the routing servers on the network;
- exporting means for exporting local routes to routing servers;
- importing meant for importing disseminated routes from routing servers;

7 receiving means for receiving a request for a route;  
8 obtaining means for obtaining static global and dynamic routes from  
9 routing servers;  
10 caching means for caching said static global and said dynamic routes for  
11 future use;  
12 finding means for finding matching routes for a specific telephone  
13 number; and  
14 prioritizing means for prioritizing matching routes.

1 19. A system of claim 18, further comprising:  
2 connecting means for connecting to routing servers; and  
3 managing means for managing connections to routing servers.

1 20. A system for a gateway server, comprising:  
2 first handling means for handling calls on a packet-switched network;  
3 second handling means for handling calls on a telephony network;  
4 bridging means for bridging said calls with routes between both a packet-  
5 switched network and a telephony network;  
6 first interacting means for interacting with calls to collect user  
7 information;  
8 first interfacing means for interfacing with routing system;  
9 second interfacing means for interfacing with database system; and  
10 second interacting means for interacting with other gateway servers.

1 21. A system of claim 20, wherein said routes comprise:  
2 querying means for querying for a route; and  
3 providing means for providing said route, wherein said route is stored  
4 locally on the gateway server.



determining means for determining a matching route; and  
second providing means for providing said matching route.

26. A system of claim 25, wherein said means for exporting local routes comprises:

requesting means for requesting exportable local routes from gateway servers;

receiving means for receiving said exportable local routes from gateway servers;

transforming means for transforming said exportable local routes into dynamic routes on the routing server;

storing means for storing said dynamic routes; and

updating means for updating said dynamic routes.

27. A system of claim 25, wherein said means for transforming an exported local route comprises:

receiving means for receiving exported local routes;

first checking means for checking a route address entry;

second checking means for checking route timing information;

third checking means for checking a route access entry;

fourth checking means for checking route ordering information;

first adding means for adding a route identity;

second adding means for adding of exporting gateway server; and

third adding means for adding a temporal stamp to said exported local route.

28. A system of claim 25, wherein said means for disseminated routing comprise:

first providing means for providing routes to a routing server;

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1           37.     The system of claim 35, further comprising the steps of:  
2           configuring system properties with a management system; wherein  
3           messages can be sent between each of the gateway server, routing server,  
4           database server, and management system over the packet-switched network.

1           38.     The system of claim 37, further comprising the steps of:  
2           updating system components with a network manager that automatically  
3           queries a client database to determine an update, and sends a message  
4           representative of the update to at least one of the gateway server, routing server,  
5           database server, and management system over the packet-switched network.

1           39.     The system of claim 35, further comprising the steps of:  
2           registering system components with a licensing server.

1           40.     A method of providing gateway services in a voice communication  
2           system over a packet-switched network, comprising the steps of:  
3           instantiating application services within an application layer; and  
4           providing a software object platform for sessions and modules, wherein  
5           said application layer includes a gateway service and a common service

1           41.     A method of claim 40, wherein said application layer also includes  
2           an autoforward service.

1           42.     A method of claim 41, wherein said platform includes a session  
2           manager that creates and manages sessions.

1           43.     A method of claim 42, wherein said session manager includes a  
2           rule engine.

1 44. A method of claim 42, wherein said session corresponds to a voice  
2 call.

3 45. A method of claim 42, further comprising the steps of:  
4 coordinating communication between a telephone line side and a  
5 packet-switched network side of the gateway server with a line group manager;  
6 managing route usage on the gateway server with a routing manager;  
7 monitors access to the database server with a database access manager;  
8 manages voice prompt usage with a media manager; and  
9 determining the costs to apply to each call with a call rating manager.

1 46. A method of claim 45, further comprising the steps of:  
2 maintaining a parsing subsystem coupled to said routing manager.

1 47. A method of claim 46, wherein said parsing subsystem comprises  
2 the steps of:  
3 maintaining a parsing table;  
4 receiving call information;  
5 determining a country code;  
6 retrieving pattern data from said parsing table;  
7 determining an area code;  
8 determining a local number;  
9 determining an extension; and  
10 outputting a call address.

1 48. A method of claim 45, further comprising the steps of:  
2 maintaining a dynamic cache subsystem coupled to said routing manager.

1           49.    A method of claim 46, wherein said parsing subsystem matches  
2 routes by wildcarding.

1           50.    A method of claim 45, further comprising the steps of:  
2 connecting a conversion module.

1           51.    A method of claim 45, further comprising the steps of:  
2 coordinating telephony and network components with a hardware device  
3 manager module.

1           52.    A method of claim 45, wherein said routing manager comprises  
2 the steps of:  
3           maintaining means for maintaining a list of routes;  
4           managing connections to the routing servers on the network;  
5           exporting local routes to routing servers;  
6           importing disseminated routes from routing servers;  
7           receiving a request for a route;  
8           obtaining static global and dynamic routes from routing servers;  
9           caching said static global and said dynamic routes for future use;  
10          finding matching routes for a specific telephone number; and  
11          prioritizing matching routes.

1           53.    A method of claim 52, further comprising the steps of:  
2 connecting to routing servers; and  
3 managing connections to routing servers.

1           54.    A method of a gateway server, comprising the steps of:  
2 handling calls on a packet-switched network;  
3 handling calls on a telephony network;

4 bridging said calls with routes between both a packet-switched network  
5 and a telephony network;  
6 interacting with calls to collect user information;  
7 interfacing with routing system;  
8 for interfacing with database system; and  
9 for interacting with other gateway servers.

1 55. A method of claim 54, wherein said routes comprise:  
2 querying for a route; and  
3 providing said route, wherein said route is stored locally on the gateway  
4 server.

1 ~~56.~~ A routing server system comprising the steps of:  
2 ~~serving routes with a routing application layer; and~~  
3 providing a common object platform for memory and modules, wherein  
4 said routing application layer includes a route translation service.

1 57. A method of claim 56, further comprising the steps of:  
2 maintaining a parsing subsystem coupled to the routing server.

1 58. A method of claim 57, wherein said parsing subsystem comprises  
2 the steps of:  
3 maintaining a parsing table;  
4 receiving call information;  
5 determining a country code;  
6 retrieving pattern data from said parsing table;  
7 determining an area code;  
8 determining a local number;  
9 determining an extension; and

outputting a call address.

59. A method of routing server, comprising the steps of:

- receiving exported local routes from gateway servers;

transforming exported local routes into dynamic routes;

storing said dynamic routes;

storing static global and disseminated routes;

providing said disseminated routes to gateway servers;

receiving requests for matching routes from gateway servers;

determining a matching route; and

providing said matching route.

60. A method of claim 59, wherein said means for exporting local routes comprises the steps of:

requesting exportable local routes from gateway servers;

receiving said exportable local routes from gateway servers;

transforming said exportable local routes into dynamic routes on the routing server;

storing said dynamic routes; and

updating said dynamic routes.

61. A method of claim 59, wherein said means for transforming an exported local route comprises the steps of:

receiving exported local routes;

checking a route address entry;

- checking route timing information;

checking a route access entry;

checking route ordering information;

adding a route identity;



66. A method of prioritizing routes, comprising the steps of:

- checking a route address entry;
- checking route timing information;
- checking a route access entry;
- checking route ordering information;
- determining a reduced route;
- comparing a requested route with said reduced route; and
- providing a list of routes.

67. A method of determining a call address, comprising the steps of:

- receiving parsed data;
- matching area code digits;
- matching phone number digits;
- matching extension digits; and
- prioritizing route addresses with matched digits.

68. A method of claim 67, wherein said matching means use wildcard

values to hold the place of number values.

69. A computer program product comprising a computer useable medium having computer program logic stored therein, said computer program logic comprising:

means for enabling a computer to handle calls received from a public switched telephone network and a packet-switched network with a gateway server;

means for enabling a computer to distribute call routing information with a routing server; and













4 means for enabling a computer to provide a common object platform for  
5 memory and modules, wherein said routing application layer includes a route  
6 translation service.

1 91. A computer program product of claim 90, further comprising:  
2 means for enabling a computer to maintain a parsing subsystem coupled  
3 to the routing server.

1 92. A computer program product of claim 91, wherein said parsing  
2 subsystem comprises:

3 means for enabling a computer to maintain a parsing table;  
4 means for enabling a computer to receive call information;  
5 means for enabling a computer to determine a country code;  
6 means for enabling a computer to retrieve pattern data from said parsing  
7 table;  
8 means for enabling a computer to determine an area code;  
9 means for enabling a computer to determine a local number;  
10 means for enabling a computer to determine an extension; and  
11 means for enabling a computer to output a call address.

1 ~~93.~~ A computer program product of routing server, comprising:  
2 means for enabling a computer to receive exported local routes from  
3 gateway servers;  
4 means for enabling a computer to transform exported local routes into  
5 dynamic routes;  
6 means for enabling a computer to store said dynamic routes;  
7 means for enabling a computer to store static global and disseminated  
8 routes;

9 means for enabling a computer to provide said disseminated routes to  
10 gateway servers;

11 means for enabling a computer to receive requests for matching routes  
12 from gateway servers;

13 means for enabling a computer to determine a matching route; and

14 second providing means for provide said matching route.

1 94. A computer program product of claim 93, wherein said means for  
2 exporting local routes comprises:

3 means for enabling a computer to request exportable local routes from  
4 gateway servers;

5 means for enabling a computer to receive said exportable local routes  
6 from gateway servers;

7 means for enabling a computer to transform said exportable local routed  
8 into dynamic routes on the routing server;

9 means for enabling a computer to store said dynamic routes; and

10 means for enabling a computer to update said dynamic routes.

1 95. A computer program product of claim 93, wherein said means for  
2 transforming an exported local route comprises:

3 means for enabling a computer to receive exported local routes;

4 means for enabling a computer to check a route address entry;

5 means for enabling a computer to check route timing information;

6 means for enabling a computer to check a route access entry;

7 means for enabling a computer to check route ordering information;

8 means for enabling a computer to add a route identity;

9 means for enabling a computer to add of exporting gateway server; and

10 means for enabling a computer to add a temporal stamp to said exported  
11 local route.



5 means for enabling a computer to check the quality of service of a route;  
6 and  
7 means for enabling a computer to check the type of route.

1 100. A computer program product of prioritizing routes, comprising:  
2 means for enabling a computer to check a route address entry;  
3 means for enabling a computer to check route timing information;  
4 means for enabling a computer to check a route access entry;  
5 means for enabling a computer to check route ordering information;  
6 means for enabling a computer to determine a reduced route;  
7 means for enabling a computer to compare a requested route with said  
8 reduced route; and  
9 means for enabling a computer to provide a list of routes.

1 101. A computer program product of determining a call address,  
2 comprising:  
3 means for enabling a computer to receive parsed data;  
4 means for enabling a computer to match area code digits;  
5 means for enabling a computer to match phone number digits;  
6 means for enabling a computer to match extension digits; and  
7 means for enabling a computer to prioritize route addresses with matched  
8 digits.

1 102. A computer program product of claim 101, wherein said matching  
2 means use wildcard values to hold the place of number values.

1 103. The gateway server according to claim 6, further including  
2 computer interface means for displaying said gateway server to a predetermined



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